

# ***DRONE DIDIS: How Village Women Are Becoming India's New Agri-Tech Pilots***

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## **ABSTRACT**

The Namu Drone Didi scheme, launched by the Government of India in November 2023, has a budget of ₹1,261 crore. It aims to deploy agricultural drones to 15,000 Women Self-Help Groups (SHGs) by 2025–26. This initiative addresses three key issues in Indian agriculture: health risks from manual pesticide use, crop yield losses of 20 to 40% due to imprecise spraying, and a shortage of rural labour caused by urban migration. Under a Drone-as-a-Service model, trained SHG members offer aerial spraying for ₹350 to 450 per acre, with projected annual incomes of at least ₹1 lakh. The field data show that Kisan drones can cover an acre in just seven to eight minutes. They also cut water use by 80 to 90% and reduce pesticide use by 30 to 40% compared to manual methods. Research indicates a 30% drop in production costs and a 41% rise in net farmer income. Beyond these benefits, the scheme empowers rural women as DGCA-certified agri-tech entrepreneurs, promoting economic participation and gender equity in Indian agriculture.

## **INTRODUCTION**

**S**unita Devi has never flown on a airplane. She grew up in a village where the most advanced tool was a diesel

pump. Now, before her neighbours finish their morning chai, she flies a drone over 20 acres of farmland, earning more in a week than

many earn in a month. Her story is becoming common.

India's agricultural sector employs over 40% of the workforce (NITI Aayog, 2025). It is experiencing difficulties like rising input costs, labour shortages, and crop losses from inaccurate practices. The Namu Drone Didi scheme, part of the broader Lakhpati Didi initiative, aims to help three crore rural women achieve annual incomes of over ₹1 lakh (DAY-NRLM, 2024). It uses precision drone technology through SHGs to tackle these problems.

### **The Crisis That Created the Conditions**

The use of manual pesticide spraying has long been a common practice in Indian agriculture. This method is physically demanding, time-consuming, and hazardous. Researches associates on long term pesticide exposure to serious health risks like lymphoma and leukemia (Kumar et al., 2026). According to the FAO pests and diseases destroy 20–40% of global crop yields each year; imprecision in manual application worsens these losses in India.

At the same time, rural-to-urban migration has cut the agricultural labour pool. This has pushed wages higher, especially during key spray times. For instance, a farmer in Kerala took three to four days to spray six acres with a backpack sprayer; a drone could do it in less than three hours. These three pressures, health risks, crop loss, and labour scarcity, have created a need for technological solutions.

### **Scheme Design and Financial Architecture**

In November 2023, the Government of India allocated ₹1,261 crore to deploy agricultural drones across 15,000 SHGs by 2025–26 (PIB, 2023). Central Financial Assistance covers 80% of acquisition costs up to ₹8 lakh per group (PIB, 2025). The remaining can be secured through the Agriculture Infrastructure Fund at a 3% annual interest rate (DAFW,

2024). Notably, ownership remains with the SHG, creating a capital formation model rather than a welfare transfer.

Training lasts 15 days and is approved by the Directorate General of Civil Aviation (DGCA, 2022). It includes drone piloting and its uses in agriculture. This covers pesticide spraying and checking crop health. A second member trains as a drone assistant, ensuring operational self-sufficiency.

### **Agronomic and Economic Outcomes**

A Kisan drone can cover one acre in seven to eight minutes, compared to three to four days with a backpack sprayer (ICAR-CRIJAF, 2023). The water use drops from over 50 litres per acre to just five or six litres a reduction of 80–90%. This efficiency is crucial. Agriculture demands a large share of national freshwater, and droughts are also becoming more common.

According to the data from ICAR shows that using drones for pesticide application is 30–40% more efficient than manual application (ICAR- CRIJAF, 2023). In addition, it maintains the same coverage quality. The adoption research shows a 30% drop in production costs and a 41% increase in net farmer income (Noor & Noel, 2023). NITI Aayog estimates that such precision agriculture could boost national productivity by up to 25% (NITI Aayog, 2025). SHGs that service 2,000–2,500 acres annually at ₹350–450 per acre can earn at least ₹1 lakh (PIB, 2025); a reported case study from Maharashtra indicates that some Drone Didi SHGs may earn around ₹60,000 per month in high-demand service areas (Vaimanika Aerospace, 2025).

### **Women as Certified Agri-Tech Entrepreneurs**

The DGCA Remote Pilot Certificate is usually the first formal qualification for many. The SHG drone is the group's first productive asset.

Historically, rural women have done a large share of agricultural work, but this has often gone unrecognised. The scheme makes them the most advanced operators in local farming. They have verified credentials and documented income. Daughters growing up in villages with active Drone Didis don't have to dream of this future (DAY-NRLM, 2024); they can see it happening next door.

### Challenges

Although the scheme has yielded good outcomes, it has serious challenges in terms of implementation. A study from ADRTC Bangalore (2024) found that 42.68% of Drone Didis faced transport issues, rising to 78.82% in southern states (PIB, 2025). The government has offered 80% subsidies for transport vehicles under the Sub-Mission on Agricultural Mechanisation. However, it is unclear how effectively this support is being used. Issues such as uneven state rollouts, DGCA certification delays, long-term asset retention, and sustainable income in various regions need more research and policy attention (ADRTC, 2024).

### CONCLUSION

The Namo Drone Didi scheme addresses productivity loss, health risks, labour shortages, and gender inequality with a united approach (PIB, 2023). Outcomes show big cuts in water and pesticide use. Farmers and service providers also earn more (Kumar et al., 2026; Noor & Noel, 2023). This makes a strong case for scaling up. The social side matters here: rural women with formal qualifications and shared assets show a new way of joining the economy. Ongoing challenges in logistics, fair rollout, and sustainability need continuous attention. By addressing these issues with the same commitment as in the scheme's design, the Namo Drone Didi model could set a strong

example for rural change in developing countries.

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